

REMARKS

I. Introduction

Claims 179 to 181 and 183 to 203 are currently pending in the present application, since claims 1 to 178, and 182 were previously canceled. In view of the foregoing amendments and the following remarks, it is respectfully submitted that all of the presently pending claims are allowable, and reconsideration of the present application is respectfully requested.

Applicants thank the Examiner for considering the previously filed Information Disclosure Statement, 1449 papers, and cited references.

II. Objection to the Specification

The Office Action objects to the Specification as assertedly failing to include an Abstract that begins on a separate sheet in accordance with 37 C.F.R. § 1.52(b)(4). Applicants respectfully traverse this assertion for the reasons explained in the prior filed Response. The Office Action further refers to MPEP § 608.01(b) as assertedly requiring that an amendment document include amendments to the Abstract on a separate page of the amendment document than amendments to the specification. The Office Action misinterprets the cited section of the MPEP. The cited section merely requires that, even when making amendments to the Abstract, the amendments cannot be to include the Abstract on the same page as another section of the specification. This might occur if, for example, the Applicant files a substitute specification in which the Abstract and another portion of the specification are included on the same page. However, the cited section does not require that the amendments be made on separate sheets of paper. Applicants' prior-filed amendment document referred to the Abstract as a whole, and did not amend the specification or Abstract to include the Abstract on the same page as any other section of the specification. That the amendments to the Abstract and specification occurred on the same page of the amendment document is irrelevant.

Nevertheless, to facilitate matters, Applicants resubmit the amendments to the specification and Abstract on separate pages of the present amendment document, thereby rendering moot the present objection.

Withdrawal of the objection of the specification is therefore respectfully requested.

III. Objection to Claims 179 to 181

Claims 179 to 181 have been amended herein without prejudice, thereby rendering moot the present objection. Withdrawal of the present objection is therefore respectfully requested.

IV. Rejection of Claims 179 and 180 Under 35 U.S.C. § 102

Claims 179 and 180 stand rejected under 35 U.S.C. § 102 as anticipated by U.S. Patent No. 5,966,534 (“the Cooke reference”). It is respectfully submitted that the Cooke reference does not anticipate either of claims 179 and 180, and the present rejection should be withdrawn, for at least the following reasons.

Claim 179, as amended herein without prejudice, recites “outputting the state information determined by execution of one of the at least the subset of the subgraphs from the one of the at least the subset of the subgraphs and transferring the state information determined by the execution of the one of the at least the subset of the subgraphs to a subsequently executed subgraph, the state information being used by the subsequently executed subgraph as a trigger of conditional processing.” With respect to the state information, the cited section of the Cooke reference merely states that when immediate predecessors of a task are executed, a successor task can then be inserted into a priority queue. The cited section does not refer to state information output by a subgraph and that is transmitted to another subgraph.

The Cooke reference therefore does not disclose, or even suggest, all of the features of claim 179, and therefore does not anticipate claim 179.

Claims 180, as herein amended without prejudice, recites “partitioning the data flow graph, thereby forming a plurality of subgraphs, . . . such that each of the plurality of subgraphs corresponds to a respective single configuration of each of a respective plurality of the runtime configurable cells.” The Cooke reference does not disclose, or even suggest, placing partitions in data flow graph to thereby obtain subgraphs, and certainly not such that each of the subgraphs corresponds to a single configuration of cells. Instead, Cooke merely states that a data structure representing a data and control flow are analyzed to identify blocks which may be implemented as an ASIC. See Cooke, column 2, lines 23 to 28. However, those blocks are then transformed into different logic. See Cooke, column 2, lines 28 to 30. The blocks are therefore not partitioned subgraphs of the larger data flow graph. Moreover, nowhere does the Cooke reference state that each such identified block corresponds to a single configuration of cells. The blocks are therefore not subgraphs that correspond to respective configurations.

The Cooke reference therefore does not disclose, or even suggest, all of the features of claim 180, and therefore does not anticipate claim 180.

Withdrawal of this anticipation rejection of claims 179 and 180 is therefore respectfully requested.

V. **Rejection of Claims 194 to 202 Under 35 U.S.C. § 102(b)**

Claims 194 to 202 stand rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 4,972,314 (“the Getzinger reference”). It is respectfully submitted that the Getzinger reference does not anticipate any of claims 194 to 202, and the present rejection should be withdrawn, for at least the reasons already explained in Applicants’ Response dated July 22, 2009. The “Response to Arguments” section of the Office Action does not substantively address Applicants’ arguments, and instead notes the Applicants’ arguments and merely repeats word for word the basis of the rejection outlined under the rejection heading of the Office Action. Applicants respectfully request the Examiner to substantively address Applicants’ arguments in the next Office communication. For the Examiner’s convenience, Applicants reproduce the arguments below.

Claim 194 is related to a method of executing a program on a runtime reconfigurable array of cells and recites, *inter alia*, “*after the computing, reconfiguring the first cell for computation of a first part of a second one of the subgraphs.*” The Office Action refers to the APs of the Getzinger reference as assertedly disclosing the cells of claim 194 that compute portions of graphs and are reconfigured between computations. However, nowhere does the Getzinger reference that the APs are reconfigurable and that any configuration of the APs is performed between processes of the APs.

Claim 194 further recites “*forming a plurality of subgraphs based on a program; computing a first part of a first one of the subgraphs with a first cell; . . . simultaneously with the reconfiguring, computing a second part of the first subgraph with a second cell.*” The Office Action refers to figure 5 and associated text of the Getzinger reference as assertedly disclosing this feature. Specifically, the Office Action asserts that Getzinger discloses that nodes A,C form a first subgraph and node B forms a second subgraph. The Office Action further asserts that Getzinger discloses that while one AP is configured to process node B, another AP processes subgraph A,C. However, the characterization of the Getzinger reference as disclosing these features is incorrect. Nowhere does the Getzinger reference indicate that nodes A,C form a subgraph defined separate from that of node B. Moreover, nowhere does the Getzinger reference indicate that node C is processed prior to processing of node B. To the contrary, the Getzinger reference indicates that node C is dependent on both A and B, so that both A and B would have to be processed prior to node C. Moreover, as explained above, the Getzinger reference does not indicate that the APs require reconfiguration. Instead, as soon as an AP is free from processing, it checks the queue to determine whether there is any node to be processed, and, if so, processes the node without any reconfiguration.

Claim 194 further recites that “*state information determined for one of the subgraphs is transferred from the one of the subgraphs to a subsequently executed subgraph.*” The Office Action refers to figure 47 of the Getzinger reference as assertedly disclosing the transfer of status information from one subgraph to another. However, the Office Action relied on the node structures of the type referred to in figure 5 as assertedly disclosing the subgraphs. The Office Action does not

explain, nor is it readily apparent, how the status referred to in figure 47 relates to the nodes of figure 5. Indeed, at least to the extent the Office Action relies on the nodes of figure 5 as assertedly disclosing the subgraphs of claim 194, figure 47 does not disclose transfer of status information from one of the subgraphs to another.

Additionally, to facilitate matters, claim 194 has been amended herein without prejudice for clarity.

For all of the foregoing reasons, the Getzinger reference does not disclose, or even suggest, all of the features of claim 194, so that the Getzinger reference does not anticipate claim 194 or any of its dependent claims 195 to 202.

Withdrawal of this anticipation rejection of claims 194 to 202 is therefore respectfully requested.

VI. Rejection of Claim 180 Under 35 U.S.C. § 103(a)

Claim 180 stands rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of U.S. Patent No. 5,021,947 (“the Campbell reference”) and U.S. Patent No. 5,606,698 (“the Powell reference”). It is respectfully submitted that the combination of the Campbell and Powell references does not render unpatentable claim 180, and the present rejection should be withdrawn, for at least the following reasons.

Claim 180, as herein amended without prejudice, recites “partitioning the data flow graph, thereby forming a plurality of subgraphs, such that the loop is split into several of the subgraphs, and such that each of the plurality of subgraphs corresponds to a respective single configuration of each of a respective plurality of the runtime configurable cells.” The Office Action refers to the Campbell reference as assertedly disclosing the subgraphs. However, the Campbell reference does not disclose or suggest partitioning a data flow graph into subgraphs that each corresponds to a configuration of a plurality of cells, as required by claim 180. Instead, the Campbell reference provides for a partitioning, which is actually described as an allocation of single instructions to single processing elements. See the Campbell reference, column 13, lines 31 et seq.

The Powell reference is not relied upon for correcting, and indeed does not correct, this critical deficiency of the Campbell reference. The combination of the Campbell and Powell references therefore does not disclose or suggest all of the features of claim 180, and therefore does not render unpatentable claim 180.

Withdrawal of this obviousness rejection of claim 180 is therefore respectfully requested.

VII. Rejection of Claims 179 to 181 and 183 to 189 Under 35 U.S.C. § 103(a)

Claims 179 to 181 and 183 to 189 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of U.S. Patent No. 5,801,958 (“the Dangelo reference”) and U.S. Patent No. 5,572,710 (“the Asano reference”). It is respectfully submitted that the combination of the Dangelo and Asano references does not render unpatentable any of claims 179 to 181 and 183 to 189, and the present rejection should be withdrawn, for at least the following reasons.

Claim 179 relates to a method of programming a system having a cellular structure of runtime reconfigurable cells. As explained in Applicants’ previously filed Response, the Dangelo reference is unrelated to the subject matter of claim 179. The Dangelo reference does not refer to a system that has a configurable cellular structure and the programming thereof. Instead, the Dangelo reference refers to the theoretical design of a system and its representation in control and dataflow graphs to ultimately select an architecture which is to be built. The ultimately built architecture is not indicated to be a configurable cellular structure. Moreover, there is no discussion of programming the architecture that is ultimately built. The Office Action refers to the Asano reference as assertedly disclosing reconfigurable cellular structure. However, even if the Dangelo reference is modified so that the designed system is a reconfigurable cellular structure, nowhere does the Dangelo reference discuss programming of such a system. Therefore, the Asano reference does not correct this critical deficiency of the Dangelo reference.

Moreover, claims 179, as herein amended without prejudice, recites “separating the control flow graph into a plurality of subgraphs, such that each of the plurality of subgraphs corresponds to a respective single configuration of each of a respective plurality of the runtime configurable cells.” Nowhere does either of the Dangelo and Asano references disclose or suggest partitioning a control flow graph into subgraphs that each corresponds to a respective configuration of a plurality of reconfigurable cells.

Moreover, as explained in Applicants’ previously filed Response, with respect to state information and the transference of such information between subgraphs, the Office Action refers to partitions of the Dangelo reference as assertedly disclosing the subgraphs. While the Dangelo reference may refer generally to storing state information and retrieval of the information for display, nowhere does the Dangelo reference refer to transfer of state information from one partition to a subsequently executed partition (relied upon for disclosing the subgraphs). Thus, nowhere does the Dangelo reference disclose, or even suggest, transferring state information from one subgraph to a subsequently executed subgraph. The Office Action does not address this argument.

Thus, the combination of the Dangelo and Asano references does not disclose or suggest all of the features of claim 179, so that the combination of the Dangelo and Asano references does not render unpatentable claim 179.

Claim 180 relates to a method for programming a system having a cellular structure of runtime reconfigurable cells. As noted above in support of the patentability of claim 179, the combination of the Dangelo and Asano references is unrelated to programming of such a system.

Moreover, claim 180 provides for splitting of a loop into several subgraphs which are then distributed for execution. While the Dangelo reference generally refers to loops and generally refers to partitions, nowhere does the Dangelo reference refer to splitting any one loop, and certainly does not refer to distribution of parts of the split loop among different cells. For example, the Office Action makes reference to figure 36g of the Dangelo reference. Figure 36g merely shows an expansion of a block associated with a block of an else branch, which itself includes a while loop. It is not a portion split from a loop. The Office Action does not address this argument.

Thus, the combination of the Dangelo and Asano references does not disclose or suggest all of the features of claim 180, so that the combination of the Dangelo and Asano references does not render unpatentable claim 180.

Claim 181 relates to a method for programming a system having a cellular structure. As noted above in support of the patentability of claims 179 and 180, the combination of the Dangelo and Asano references is unrelated to programming of such a system.

Thus, the combination of the Dangelo and Asano references does not disclose or suggest all of the features of claim 181, so that the combination of the Dangelo and Asano references does not render unpatentable claim 181 or any of its dependent claims 183 to 189.

Withdrawal of this obviousness rejection of claims 179 to 181 and 183 to 189 is therefore respectfully requested.

VIII. Rejection of Claims 190 to 193 Under 35 U.S.C. § 103(a)

Claims 190 to 193 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of the Dangelo reference, U.S. Patent No. 6,421,808 ("the McGeer reference"), and the Asano reference. It is respectfully submitted that the combination of the Dangelo and McGeer references do not render unpatentable any of claims 190 to 193, and the present rejection should be withdrawn, for at least the following reasons.

Claim 190 relates to a method of executing a single program on a system having an array of runtime reconfigurable cells. As noted above in support of the patentability of claims 179 to 181, the combination of the Dangelo and Asano references is unrelated to programming of such a system. The McGeer reference is not asserted to and does not correct this critical deficiency of the combination of the Dangelo and Asano references.

Moreover, as noted in Applicants' previously filed Response, claim 190 provides for separating a program into subgraphs distributed among the runtime reconfigurable cells for execution by the runtime reconfigurable cells. The Office Action refers to the partitions of the Dangelo

reference as assertedly disclosing the subgraphs of claim 190. However, the partitions of the Dangelo reference are not distributed among an array of cells for execution by the cells. Instead, the partitions correspond to separate architectural sections of a hardware device which can ultimately be built by the conceptualization provided by the partitions. The Office Action does not address this argument.

Accordingly, the combination of the Dangelo, McGeer, and Asano references does not disclose or suggest all of the features of claim 190, so that the combination of the Dangelo, McGeer, and Asano references does not render unpatentable claim 190 or any of its dependent claims 191 to 193.

Withdrawal of this obviousness rejection of claims 190 to 193 is therefore respectfully requested.

IX. Rejection of Claim 203 Under 35 U.S.C. § 103(a)

Claim 203 stands rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of the Dangelo reference, U.S. Patent No. 6,708,325 (“the second Cooke reference”), and the Asano reference. It is respectfully submitted that the combination of the Dangelo, second Cooke, and Asano references does not render unpatentable claim 203, and the present rejection should be withdrawn, for at least the following reasons.

Claim 203 relates to a method for programming a system having a runtime configurable cellular structure. As noted above in support of the patentability of claims 179 to 181, the combination of the Dangelo and Asano references is unrelated to programming of such a system. The second Cooke reference is not asserted to and does not correct this critical deficiency of the combination of the Dangelo and Asano references. That is, the second Cooke reference does not suggest modifying the Dangelo reference to apply its teachings for programming of such a system.

Moreover, as noted in Applicants’ previously filed Response, with respect to state information and the transference of such information between subgraphs, as required by claim 203, the Office Action refers to partitions of the Dangelo reference as assertedly disclosing the subgraphs. While the Dangelo reference may refer generally to storing state information and retrieval of the information for display, nowhere does the Dangelo reference refer to transfer of state information from one partition to a subsequently executed partition (relied upon for disclosing the subgraphs). Thus, nowhere does the Dangelo reference disclose, or even suggest, transferring state information from one subgraph to a subsequently executed subgraph. The Office Action does not address this argument.

Moreover, as noted in Applicants’ previously filed Response, claim 203 recites that *“the extracting includes, for a conditional instruction of the program, extracting a plurality of different sets of subgraphs, each set representing a different instruction path of the conditional instruction.”* The Office Action refers to column 6, lines 23 to 67 of the second Cooke reference as

assertedly disclosing this feature. However, any review of the cited section makes plain that it does not disclose or suggest this feature. Instead, the cited section refers generally to partitioning of functions into FPGA blocks to minimize the required time for each separate FPGA block. Indeed, any review of the second Cooke reference makes plain that it does not disclose or suggest extraction for a conditional instruction as provided for in the context of claim 203. the Office Action does not address this argument.

Moreover, as noted in Applicants' previously filed Response, claim 203 recites that *"for each one of the different sets of subgraphs, the system sets execution of the set of subgraphs to be bypassed as soon as an evaluation in accordance with the conditional instruction reveals that output of the set of subgraphs will not be selected."* The Office Action refers to column 8, lines 9 to 19 of the second Cooke reference as assertedly disclosing this feature. However, the cited section merely refers to preloading of instructions based on branch prediction, which concerns a probable, and often faulty, branch selection. It does not concern a case of an evaluation that a subgraph output will not be selected, and does not concern bypass of any subgraph. The Office Action does not address this argument.

For all of the foregoing reasons, the combination of the Dangelo, second Cooke, and Asano references does not disclose or suggest all of the features of claim 203, so that the combination of the Dangelo, second Cooke, and Asano references does not render unpatentable claim 203.

Withdrawal of this obviousness rejection of claim 203 is therefore respectfully requested.

X. Conclusion

In light of the foregoing, it is respectfully submitted that all pending claims are in condition for allowance. Prompt reconsideration and allowance of the present application are therefore earnestly solicited.

Respectfully submitted,

Dated: October 5, 2010

By: /Aaron Grunberger/
Aaron Grunberger
Reg. No. 59,210

KENYON & KENYON LLP
One Broadway
New York, New York 10004
(212) 425-7200

CUSTOMER NO. 26646